

**REMARKS**

Applicants respectfully request reconsideration of the application, as amended, in view of the following remarks.

**Claims 9, and 11 are independent Claims.**

Claims 10, 13, 15-18 and 31 depend directly or indirectly on Claim 9.

Claims 12, 19-24 and 32 depend directly or indirectly on Claim 11.

The Examiner indicated in the interview of March 3, 2004, that Claims 9- 13, 15-19, 21-24 and 31-32 are allowable in view of the **executed Rule 132 Declaration filed January 7, 2004**. A copy of the Declaration as filed including the date-stamped filing receipt is attached herewith.

The present invention as set forth in **amended Claim 9** relates to a method for removing carbon monoxide from a hydrogen gas, comprising:

contacting said hydrogen gas which contains carbon monoxide with a catalyst for a water gas shift reaction said **catalyst comprising at least platinum and rhenium**, both supported on a metal oxide carrier.

Ou et al fail to disclose or suggest the removal of carbon monoxide from a hydrogen gas using a catalyst comprising platinum and rhenium. In addition, Applicants previously provided on January 7, 2004 an **executed Rule 132 Declaration** showing superior properties of the combination of platinum and rhenium.

Ou et al disclose a process for the separation and removal of hydrogen alone or together with carbon monoxide, if present, from a mixture of these gases with reactive unsaturated hydrocarbons by contacting the mixture with oxygen over a catalyst at conditions sufficient to oxidize the hydrogen to form water while suppressing the reactive, unsaturated hydrocarbons (Ou et al, abstract). The removal of carbon monoxide by reaction with water (water gas-shift reaction) is disclosed at col. 1, lines 65-col. 5, line 5. Catalysts suitable for

the second reaction zone are disclosed at col. 6, lines 46-65. They include one or more metals or metal oxides of Groups IB, IIB, IIIB, IVB, VB, VIB, VIIB and VIII and the elements of copper and zinc supported on inert porous supports. Selected removal of CO is further described, for example, in Example 1 at col. 7, lines 49 and 50. However, there is no disclosure or suggestion to use the claimed catalyst for the CO removal. Col. 6, lines 46-50 only gives a laundry list of possible elements for the catalyst material. But there is no suggestion to select the specific combination of platinum with rhenium. Ou et al exemplify only a platinum-on-alumina catalyst (Example 1, col. 7, line 18). However, Ou et al do not exemplify the specific combination of platinum and rhenium in the catalyst.

In addition, the **Rule 132 Declaration filed January 7, 2004**, shows in the Figure that the catalyst having platinum and rhenium works significantly better for the conversion of CO than each of the catalysts having only platinum or only rhenium. Further, the superior effect of the catalyst according to the present invention having both platinum and rhenium is shown over a broad temperature range from 175 to 250°C. These results are not disclosed or suggested by cited the references. Accordingly, even if the Examiner can establish a prima facie case of obviousness, such is rebutted by the data of the Rule 132 Declaration.

Therefore, the rejection of Claims 9, 10, 13 and 31 under 35 U.S.C. §103(a) as being unpatentable over Ou et al is believed to be unsustainable as the present invention is neither anticipated nor obvious and withdrawal of this rejection is respectfully requested.

In addition, the rejection of Claims 9-13, 15, 18, 19, 21, 24, 31 and 32 under 35 U.S.C. §103(a) as being unpatentable over Clawson et al is respectfully traversed.

The present invention as set forth in **amended Claim 11** relates to a fuel cell generation system, comprising:

a hydrogen gas which contains carbon monoxide in contact with a **catalyst** for a water gas shift reaction **comprising at least platinum and rhenium**, both supported on a metal

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Reply to Office Action of: August 5, 2003  
Amendment Dated:

oxide carrier so as to remove carbon monoxide from the hydrogen gas, and means for supplying said hydrogen gas to a fuel cell.

Clawson et al do not disclose the combination of platinum and rhenium in the catalyst.

All that this reference discloses are low temperature shift catalysts which are either of supported platinum or supported rhenium (col. 5, line 27). The Examiner also has acknowledged that the reference fails to disclose the combination of platinum and rhenium (Office Action at page 5). Accordingly, even if the Examiner can establish a prima facie case of obviousness, such is rebutted by the data of the **Rule 132 Declaration filed January 7, 2004**.

Therefore, the rejection of Claims 9-13, 15, 18, 19, 21, 24, 31 and 32 under 35 U.S.C. §103(a) as being unpatentable over Clawson et al is believed to be unsustainable as the present invention is neither anticipated nor obvious and withdrawal of this rejection is respectfully requested.

The rejections of Claims 26-30 and 33 are moot in view of the cancellation of these claims.

The rejection of Claims 11, 12, 15-19, 21-24 and 32 under 35 U.S.C. §112, 2<sup>nd</sup> paragraph, is obviated by the amendment of Claim 11.

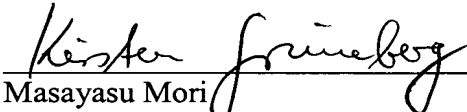
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This application presents allowable subject matter, and the Examiner is kindly requested to pass it to issue. Should the Examiner have any questions regarding the claims or otherwise wish to discuss this case, he is kindly invited to contact Applicants' below-signed representative, who would be happy to provide any assistance deemed necessary in speeding this application to allowance.

Respectfully submitted,

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Dept.: Chemical

By: NFO/KAG/dlc

Serial No. 09/720,262

In the matter of the Application of: Akira IGARASHI, et al.

For: CATALYSTS FOR WATER GAS SHIFT REACTION, METHOD FOR  
REMOVING CARBON MONOXIDE IN HYDROGEN GAS AND FUEL CELL  
GENERATION SYSTEM

Due Date: N/A

The following has been received in the U.S. Patent Office on the date stamped hereon:

- Dep. Acct. Order Form
- PTO Cover Letter
- Declaration Under 37 C.F.R. §1.132 (executed, 4pp.)



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**IN THE UNITED STATES PATENT & TRADEMARK OFFICE**

IN RE APPLICATION OF

AKIRA IGARASHI ET AL.

: EXAMINER: LANGEL, WAYNE A

SERIAL NO: 09/720,262

FILED: FEBRUARY 6, 2001

: GROUP ART UNIT: 1754

FOR: CATALYSTS FOR WATER GAS :  
SHIFT REACTION, METHOD FOR  
REMOVING CARBON MONOXIDE  
IN HYDROGEN GAS AND FUEL CELL  
GENERATION SYSTEM

**DECLARATION UNDER 37 C.F.R. § 1.132**

ASSISTANT COMMISSIONER FOR PATENTS  
WASHINGTON, D.C. 20231

SIR:

Now comes Manabu Mizobuchi who deposes and states:

1. That I am a graduate of Graduate School of Engineering Science, Osaka University and received my master degree in the year 1986.
2. That I have been employed by MATSUSHITA ELECTRIC WORKS, LTD. for 17 years as an engineer in the fields of catalyst and fuel cell technologies.
3. That the following experiments were carried out by me or under my direct supervision and control.

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#### 4. Experiments

The experiments were carried out as follows:

##### 4.1 Preparation of Catalysts

A zirconia carrier was prepared as explained in Example 1 of the specification, and then platinum was supported on the carrier to produce the catalyst Pt(3)/ZrO<sub>2</sub>. The amount of platinum was 3.0 % by weight.

Example 17 of the specification was carried out except that platinum was not supported so as to produce the catalyst Re(3)/ZrO<sub>2</sub> which carries only rhenium. The amount of rhenium was 3.0 % by weight.

Example 17 in the specification was carried out so as to produce the catalyst Pt(3)-Re(2)/ZrO<sub>2</sub>. The amount of platinum was 3.0 % by weight, and the amount of rhenium was 2.0 % by weight.

##### 4.2 Evaluation of Catalysts

Evaluation of CO removing performance of each of the above catalysts was carried out in the same manner as explained in Example 1 of the specification, except that a ratio of H<sub>2</sub>O/CO was 1.5, SV was 9500 (1/hr), and the reaction temperatures were 175 °C, 200 °C, 225 °C and 250 °C.

#### 5. Results

The attached Figure which is incorporated into this Declaration shows that the catalyst having platinum and rhenium works significantly better for the conversion of CO than each of the catalysts having only platinum or only rhenium. Further, the superior effect of the catalyst according to the present invention having both platinum and rhenium is shown over a broad

temperature range from 175 to 250°C. This results are not disclosed or suggested by cited the references.

6. The undersigned petitioner declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

7. Further deponent saith not.

Manabu Mizobuchi

Signature

12 / 10 / 2003

Date

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